

90370121  
TaskID# 7040  
cc: Mike

# **RECLAMATION COST ESTIMATE**

## **DANEROS MINE**

RECEIVED

DEC 08 2015

Div. of Oil, Gas & Mining



Prepared by  
**Energy Fuels Resources (USA) Inc.**  
**225 Union Boulevard, Suite 600**  
**Lakewood, CO 80228**

**December 2015**



## 1.0 Introduction

The existing facilities at the Daneros Portal Area is the basis for the bonding approach presented in this cost estimate.

## 2.0 Reclamation Tasks

The reclamation tasks at the Daneros Mine are grouped into the following categories: demolition of structures, grading, and revegetation.

### 2.1 Demolition of Structures

Demolition costs of the constructed structure are estimated. The abandonment of buildings and support items like wells and vent shafts are estimated using RS Means, which is an estimating method that uses unit costs compiled for completing similar construction activities. After finding the unit cost for a specific task, the unit cost is multiplied by the number of units (e.g., liner feet, cubic hours, hours of operation) for that activity.

### 2.2 Grading

The grading category includes placing stockpiled ore back into the mine, sealing the portals with development rock, ripping compacted area, and contouring the DRA and other areas to achieve slopes of 3H:1V or less (except for the portal seals, which will have slopes of 2H:1V or less). The tasks in the grading category require the use of a low-profile, 2-cy load-haul-dump (LHD) unit and a D-7 track dozer with rippers. The LHD will be used for placing the ore back into the mine as well as sealing the portal with backfilled development rock. The dozer will be utilized for grading and ripping the site in preparation for final soil placement.

The costs for these tasks are based on the quantity of material to be moved, the hourly productivity, and the hourly operating cost of the equipment selected. The design volumes for cut and fill, reclamation areas and facility footprints were generated using AutoCAD. Geometric calculations and typical stockpile sizes for the operation were estimated based on expected operation conditions. The hourly productivity is estimated based on the Cat Handbook, which estimates the productivity of various pieces of equipment for differing operating conditions. The hourly operating costs are based on the equipment hourly rental cost, hourly fuel and maintenance cost and the operator cost. The rental and fuel costs were obtained from Wheeler Equipment Co. Hourly rental costs from Wheeler Equipment Co. are summarized in the attached memo. The operator hourly rate was estimated from Energy Fuels internal fully burdened wage for senior equipment operators. This number was increased to account for taxes and profit.

### 2.3 Revegetation

The revegetation category includes placing an 18-inch cover of inert rock and soil over the DRAs and a 6-inch soil cover over the remaining disturbed areas followed by scarification (i.e., discing) and broadcast seeding. The costs for placing inert rock and topsoil are based on the quantity of material to be moved and hourly equipment costs in a similar manner as was done for grading. A 966 rubber-tire, front-end loader and D-7 track dozer are utilized for soil placement. The cost for seeding is based on a unit cost per area from RS Means multiplied by the quantity of area to be seeded.



### 3.0 Summary

Energy Fuels estimates the reclamation costs for the Daneros Mine are as follows:

- Demolition - \$40,092
- Grading - \$15,040
- Revegetation - \$16,959
- Indirects - \$19,804

Total	\$102,000
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Daneros Bond Estimate Summary  
Bonding Calculations

Direct Costs

Subtotal Demolition and Removal	\$40,092
Subtotal Backfilling and Grading	\$15,040
Subtotal Revegetation	\$26,959
<b>Subtotal Direct Costs</b>	<b>\$82,092</b>

Indirect Costs

Mob/Demob	\$4,500	
Contingency	\$4,105	5.0%
Engineering Redesign	\$2,052	2.5%
Main Office Expense	\$5,582	6.8%
Project Management Fee	\$2,052	2.5%
<b>Subtotal</b>	<b>\$18,291</b>	

Total Cost 2015 \$100,384

Escalation (0.5% every year for 5 years) \$2,535

Reclamation Cost Escalated \$102,919

Bond Amount (rounded to nearest \$1,000) \$103,000

Posted Bond \$81,120

Difference Between Cost Estimate and Posted Bond -\$21,880.00

Percent Difference -27.0%

Notes:

This bond estimate includes the disturbance at the Daneros Portal Area and 2 vents



Ref.	Description Daneros Portal Site	Means Costworks 2012 Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Quantity	Unit	Cost
	<b>Demo one 24" Culverts Under Portal Pad Area</b>																	
	Remove Culvert	33.41.13.40.218	\$6.20	LF	100											100	LF	\$620.00
	<b>Subtotal</b>																	\$620.00
	<b>Removal and Dismantle of Office</b>																	
	Selective Demo, pre-engineered steel bldg	13.05.05.50.0550	\$2.81	SF					400						SF	400	SF	\$1,124.00
	Removal of debris to landfill in roll off container	Estimated	\$1,000.00	EA												3	EA	\$3,000.00
	<b>Subtotal</b>																	\$1,124.00
	<b>Removal and Dismantle of Shop</b>																	
	Selective Demo, pre-engineered steel bldg	13.05.05.50.0550	\$2.81	SF					1500						SF	1500	SF	\$4,215.00
	<b>Subtotal</b>																	\$4,215.00
	<b>Removal of Storage Shed</b>																	
	Selective Demo, pre-engineered steel bldg	13.05.05.50.0550	\$2.81	SF					200						SF	200	SF	\$562.00
	<b>Subtotal</b>																	\$562.00
	<b>Removal of Concrete Slabs</b>																	
	Demolish concrete slab of office	02.41.13.17.5300	\$19.80	SY					45						SY	45	SY	\$891.00
	Demolish concrete slab of shop	02.41.13.17.5300	\$19.80	SY					167						SY	167	SY	\$3,306.60
	Demolish concrete slab of storage shed	02.41.13.17.5300	\$19.80	SY					23						SY	23	SY	\$455.40
	<b>Subtotal</b>																	\$4,653.00
	<b>Removal of Tanks</b>																	
	Removal of 6,000 gal fuel tank	13.05.05.75.0530	\$1,575	EA											EA	2	EA	\$3,150.00
	Removal of 2,500 gal brine tank	13.05.05.75.0530	\$1,575	EA											EA	1	EA	\$1,575.00
	Removal of propane tank	13.05.05.75.0520	\$730	EA											EA	1	EA	\$730.00
	<b>Subtotal</b>																	\$5,455.00
	<b>Water Well Abandonment</b>																	
	Pull the pump	32.21.13.10.2050	\$1,850	EA											EA	2	EA	\$3,700.00
	Labor (20 hours)	Estimate	\$72.00	HR											HR	20	HR	\$1,440.00
	Hole plug	UDOGM	\$7	CF											CF	439	CF	\$3,179.74
	<b>Subtotal</b>																	\$8,319.74
	<b>Abandon Vent Holes (2 Vents)</b>																	
	Polyurethane foam plug	www.spravez.com	\$ 2,525.00	\$/vent											EA	2	EA	\$5,050.00
	Place 15" diameter 18" thick reinforced concrete cap	Estimate	\$500.00	CY						20					CY	20	CY	\$10,000.00
	Excavating, bulk bank measure, 3.5 CY, hydraulic excavator, crawler mounted	31.23.16.42.0305	\$1.56	BCY						60					BCY	60	LCY	\$93.60
	<b>Subtotal</b>																	\$15,143.60
	<b>Total</b>																	\$40,092.34

BCY - bank cubic yard

CY - cubic yard

HP - horsepower

LCY - loose cubic yard

MPH - miles per hour





PROJECT: Daneros Mine Rec. Cost. Est.

COMPUTED BY: RE

CHECKED BY: AR

CLIENT: Energy Fuels

12/2/2015

DATE CHECKED: 3/18/2014

WRKSHT NO.: DEMO-DPS

**Description:** Assumptions and calculations for demolition in support of the reclamation bond for the Daneros Mine - Daneros Portal Site.

**Assumed Material Properties**

Soil Bulking factor:	1.2	Conversion from BCY to LCY
Soil Compaction Factor:	1.1	Conversion from BCY to ECY
Soil Compaction Factor:	0.9	Conversion from LCY to ECY

BCY - bank cubic yard - in place volume prior to excavation

LCY - loose cubic yards - volume after excavation

ECY - embankment cubic yards (aka compacted cubic yards) - volume after compaction

**Demo Culvert****Assumptions**

- Assume culvert by office will be removed and not replaced
- Assume demolished inert material can be buried in development rock area
- Assume a trapezoidal volume for the excavation of the culverts
- Assume 3 culverts under county road will remain

**Calculations**

Number of culverts	1 EA	Estimated from pdf drawing
Estimated length of culvert	100 FT	Estimated from pdf drawing
Inside diameter of culvert	24 IN	
Cost per foot of removal \$	6	RS Means without material costs
		33.41.13.40.218
Total feet of culvert to be removed	100	

**Remove and Dismantle Office****Assumptions**

- Assume building will be dismantled
- Assume 3 roll off Containers will be filled with material not allowed to be placed in the DRA.
- Assume each roll off costs \$1000 to fill and haul to landfill in Blanding.

**Calculations**

Estimated Width of the building	10 FT	Estimated from pdf drawing
Estimated length of the building	40 FT	Estimated from pdf drawing
Estimated area of the building	400 SF	
	45 SY	

**Remove and Dismantle Shop****Assumptions**

- Assume building will be dismantled

**Calculations**

Estimated Width of the building	30 FT	Estimated from pdf drawing
Estimated length of the building	50 FT	Estimated from pdf drawing
Estimated area of the building	1500 SF	
	167 SY	





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**Description:** Assumptions and calculations for demolition in support of the reclamation bond for the Daneros Mine - Daneros Portal Site.

**Remove and Dismantle Storage Shed****Assumptions**

- Assume building will be dismantled

**Calculations**

Estimated Width of the building	10 FT	Estimated from pdf drawing
Estimated length of the building	20 FT	Estimated from pdf drawing
Estimated area of the building	200 SF	
	23 SY	

**Removal of Above Ground Tanks****Assumptions**

- Assume tanks will be removed

**Calculations**

Number of 6,000 gallon fuel tanks	2 EA	Estimated from pdf drawing
Number of 2,500 gallon brine tanks	1 EA	Estimated from pdf drawing
Number of propane tanks	2 EA	Estimated from pdf drawing

**Water Well Abandonment****Assumptions**

- Assume well will be abandoned by being filled with Hole Plug  
- Pump will be removed prior to abandonment.

**Calculations**

Number of wells:	1 EA
Diameter of the well:	7 IN
Diameter of the well:	0.58 FT
Depth of the well:	1660 FT
Volume:	439 CF
Volume:	17.0 CY





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**Description:** Assumptions and calculations for demolition in support of the reclamation bond for the Daneros Mine - Daneros Portal Site.

### **Vent Hole Abandonment**

#### **Assumptions**

- Assume vent hole has a diameter of 7 feet and is 440 feet deep.
- Assume the vent is cased and does not require full backfill.
- See Figure 4-1 For Vent Closure Details.
- Assume concrete collar and backfill extends 4-feet from outside of vent hole.
- Assume soil backfill over concrete collar has a depth of 4 feet.

#### **Calculations**

Number of vent holes 2 EA

Vent hole diameter 7 FT

Vent hole depth 440 FT

Polyurethane Foam Backfill Depth 14 FT

Polyurethane Foam Backfill Volume 539 CF

Material Cost \$ 2,050.00 \$/1000 CF

Install Labor Cost \$ 3,000.00 \$/day

Concrete collar thickness 18 IN

1.5 FT

Concrete collar extent beyond vent hole 1 FT

Concrete collar diameter 15 FT

Concrete collar volume per vent hole 265 CF

10 CY

*Rounded up to nearest whole number.*

Reinforcement density 159 LBS/CY

Reinforcement per vent hole 1590 LBS

Backfill depth 4 FT

Backfill diameter 15 FT

Backfill volume per vent hole 707 CF

27 ECY

27 BCY

30 LCY

Concrete 20 CY

Reinforcement 3180 LBS

Total backfill 54 ECY

54 BCY

60 LCY



Daneros Portal Site Description	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Labor Hourly Wage Rate	Hourly Cost	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dig.	Units	Cost**
<b>Place Excess Ore Into Portal</b>																
2 yd. LHD placing ore into underground workings	\$76.00	\$47.50	\$136	N/A	\$71.75	N/A	\$0.00	\$207.60	\$/HR		N/A	36	LCY	N/A	N/A	\$6,259.36
<b>Subtotal</b>																\$6,259
<b>Seal Portals with Development Rock (10'x10'x30' deep)</b>																
2 yd. LHD	\$76.00	\$47.50	\$136	N/A	\$71.75	N/A	\$0.00	\$207.60	\$/HR		N/A	36	LCY	N/A	N/A	\$1,287.55
<b>Subtotal</b>																\$1,288
<b>Grade Rock Pile</b>																
Dozing material (D-7), 100' push	\$101.00	\$47.50	\$163	N/A	\$71.75	N/A	\$0.00	\$235.10	\$/HR		N/A	435.75	LCY	N/A	N/A	\$2,136.54
<b>Subtotal</b>																\$2,137
<b>Gamma Scan</b>																
Gamma Scan (2 days)						72							hr			\$1,152
<b>Subtotal</b>																\$1,152
<b>Grade Development Berm</b>																
Dozing material (D-7), 100' push	\$101.00	\$47.50	\$163	N/A	\$71.75	N/A	\$0.00	\$235.10	\$/HR		N/A	435.75	LCY	N/A	N/A	\$250.35
<b>Subtotal</b>																\$250
<b>Subsurface Ripping</b>																
Subsurface Ripping (D-7)	\$101.00	\$47.50	\$163	N/A	\$71.75	N/A	\$0.00	\$235.10	\$/HR		N/A	250	LCY	N/A	N/A	\$3,944.67
<b>Subtotal</b>																\$3,945
<b>Total</b>																\$15,040.47

\* Hourly rates include overhead and profit

N/A - information not available

LCY - loose cubic yard

HR - hour

LHD Rental Cost

LHD fuel cost per hour

Dozer (D-7) Rental Cost

Fuel Cost Per Hour

Maintenance Cost Per Hour

Operator Fully Burdened Hourly Rate

76

12.5

101

20

35

72





PROJECT: Daneros Mine Rec. Cost. Est.  
 JOB NO.: 0  
 CLIENT: Energy Fuels

COMPUTED BY: RE  
 DATE: 12/2/2015

CHECKED BY: AR  
 DATE CHECKED: 3/18/2014  
 WRKSHT NO.: EARTH-DPS

**Description:** Earthwork calculations in support of the reclamation bond for the Daneros Portal Site

**Assumed Material Properties for Development Rock Material**

Soil Bulking factor:	1.2	Conversion from BCY to LCY
Soil Compaction Factor:	1.1	Conversion from BCY to ECY
Soil Compaction Factor:	0.9	Conversion from LCY to ECY

BCY - bank cubic yard - in place volume prior to excavation

LCY - loose cubic yards - volume after excavation

ECY - embankment cubic yards (aka compacted cubic yards) - volume after compaction

**Place Excess Ore Back Into Portal**

**Assumptions**

- Assume 300 tons per day generated at site.
- Assume ore is stockpiled for 5 days.
- Assume density of ore is 1.4 tons/cy.

**Calculations**

Ore Generated Per Day	300 tons	Energy fuels Operations Data
Number of Days Stockpiled	5 days	Energy fuels Operations Data
Total Quantity of Ore Stockpiled on Site	1500 tons	
Assumed Density of Ore	1.4 tons/CY	pg 27-4 CAT Handbook, Edition 36
Total Volume of Ore Placed Back into Portal	<b>1,072 CY</b>	

**Seal Portals with Development Rock**

**Assumptions**

- Assume portal adit is 10 feet high by 10 feet wide.
- Assume seal will extend 30 feet into the portal adit.
- Assume outside seal will be sloped at 2H:1V
- There are 2 Portals at the Daneros Mine

**Calculations**

Portal Height	10 FT	
Portal Width	10 FT	
Depth of Seal into Portal	30 FT	Reclamation Plan
Volume of Develop Rock to Seal Inner Portion	3000 CF	
	<b>112 CY</b>	
Slope of Outer Seal	2 :1	Reclamation Plan
2H:1V Outer Seal Slope Length	20 FT	
Front Slope Seal Volume	1000 CF	Triangular Wedge
Side Slope Seal Volume	1000 CF	Half Triangular Wedge by 2 sides
Volume of Develop Rock to Seal Outer Portion	2000 CF	
	<b>75 CY</b>	
Total Volume of Development Rock to Seal Portal	<b>187 CY</b>	





PROJECT: Daneros Mine Rec. Cost. Est.  
JOB NO.: 0  
CLIENT: Energy Fuels

COMPUTED BY: RE  
DATE: 12/2/2015

CHECKED BY: AR  
DATE CHECKED: 3/18/2014  
WRKSHT NO.: EARTH-DPS

**Description:** Earthwork calculations in support of the reclamation bond for the Daneros Portal Site

#### Grade Development Rock Pile

##### **Assumptions**

- Material will be pushed with a dozer to rough grade
- No fine grading of surface will be conducted

##### **Calculations**

Reclamation re-grade volume	3,300 BCY	Based on CADD volume determination
Reclamation re-grade volume	3,960 LCY	Rounded up to nearest whole number

#### Gamma Scan

##### **Assumptions**

- Perform gamma scan on 50 ft center grid
- Place elevated gamma count material back in the mine
- Each crew member has a cost of \$72/hr
- 8-hour work day
- 2 days to complete survey

#### Grade Mine Yard Perimeter Berms

##### **Assumptions**

- Material will be pushed with a dozer to rough grade
- No fine grading of surface will be conducted

Shape:	Triangular	
Side slopes:	1 :1	
Finished Channel Height:	2 FT	
Bottom width:	4 FT	
Estimated length of berms	1300 FT	
Volume of excavation:	10400 CF	
	<b>386 BCY</b>	Rounded up to nearest whole number
	464 LCY	Rounded up to nearest whole number

#### Subsurface Ripping

##### **Assumptions**

- The entire mine yard will be ripped to a depth of 12" to encourage vegetation root development
- Approximately 20% of the Development Rock Area will be ripped as it will have just recently been graded.

Mine Yard Area	2.00 AC	
20% of DRA Area	0.60 AC	
Ripping Depth	12 inches	
Ripping Volume	4,195 BCY	
D-7 Ripping Productivity	250 BCY/Hr	No chart in Cat handbook for D-7. Used lowest value for D-8



Daneros Portal Site Description	Hourly Rental Costs	Hourly O & M Costs	Operator Hourly Cost	Total Eq. & Lab. Costs	Units	Material Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
<b>Remove Stockpiled Inert Material and Spread</b>														
966 Removing and Staging Inert Material	\$76	\$48	\$72	\$195	\$/HR	\$0.00	N/A	3,227	LCY	119	LCY/HR	N/A	N/A	\$5,316
D-7 Dozer Spreading Inert Material	\$101	\$55	\$72	\$228	\$/HR	\$0.00	N/A	3,227	LCY	435.75	LCY/HR	N/A	N/A	\$1,686
<b>Subtotal</b>														<b>\$7,002</b>
<b>Remove Stockpiled Topsoil and Spread</b>														
966 Removing and Staging Topsoil	\$76	\$48	\$72	\$195	\$/HR	\$0.00	N/A	4,275	LCY	119	LCY/HR	N/A	N/A	\$7,044
D-7 Dozer Spreading Topsoil	\$101	\$55	\$72	\$228	\$/HR	\$0.00	N/A	4,275	LCY	435.75	LCY/HR	N/A	N/A	\$2,235
<b>Subtotal</b>														<b>\$9,278</b>
<b>Seeding</b>														
Seeding, 0.45 pounds per MSF, tractor spreader	RS Means	32 92 19 14 0500				\$29.50	\$/MSF	362	MSF			N/A	N/A	\$10,679
<b>Subtotal</b>														<b>\$10,679</b>
<b>Total</b>														<b>\$26,959</b>

\* Hourly rates include overhead and profit

N/A - information not available

LCY - loose cubic yard

HR - hour

Loader Rental Cost

Loader fuel cost per hour

Dozer (D-7) Rental Cost

Fuel Cost Per Hour

Maintenance Cost Per Hour

Operator Fully Burdened Hourly Rate

\$	76
\$	13
\$	101
\$	20
\$	35
\$	72





PROJECT: Daneros Mine Rec. Cost. Est.  
JOB NO.: 0  
CLIENT: Energy Fuels

COMPUTED BY: RE  
DATE: 12/2/2015

CHECKED BY: AR  
DATE CHECKED: 3/18/2014  
WRKSHT NO.: REVEG-DPS

**Description:** Calculations in support of the reclamation bond for the Daneros Mine - Daneros Portal Site.

#### **Assumed Material Properties**

Soil Bulking factor:	1.2	Conversion from BCY to LCY
Soil Compaction Factor:	1.1	Conversion from BCY to ECY
Soil Compaction Factor:	0.9	Conversion from LCY to ECY

BCY - bank cubic yard - in place volume prior to excavation

LCY - loose cubic yards - volume after excavation

ECY - embankment cubic yards (aka compacted cubic yards) - volume after compaction

#### **Remove Stockpiled Inert Material and Spread**

##### **Assumptions**

- Material will be moved and staged with a wheeled loader
- Material will be spread with a dozer to rough grade over the DRA.
- The same productivity assumptions apply for the inert material as for the topsoil.

##### **Calculations**

Estimated area of development rock area	2 AC	
Assume 12 inch thickness spread	1.0 FT	Assumption
Volume	87,120 BCF	
Volume	3,227 BCY	

#### **Remove Stockpiled Topsoil and Spread**

##### **Assumptions**

- Material will be moved and staged with a wheeled loader
- Material will be spread with a dozer to rough grade.
- Assumed distribution of topsoil windrow along roads will be spread while ripping.

##### **Calculations**

- Assumes 12" of topsoil over DRA and ~ 6" over remainder of Mine Yard
- |                           |           |
|---------------------------|-----------|
| Soil stockpile volume     | 3,563 BCY |
| Haul and spreading volume | 4,275 LCY |

#### **Seed**

##### **Assumptions**

- Assumes surface of topsoil layer will be scarified during seeding
- Assumes broadcast with native seed will be applied over topsoil
- Assumes vent shaft disturbance is 0.25 acres each.
- Assumes access road disturbed areas for each vent shaft is approximately 1.25 acres.

##### **Calculations**

Estimated disturbed area of vents	0.5	
Estimated disturbed area of access roads	2.5	
Daneros Portal Area Disturbance	5.3 AC	
	40,172 SY	Rounded up to nearest whole number
	362 MSF	Rounded up to nearest whole number





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[www.energyfuels.com](http://www.energyfuels.com)

## MEMORANDUM

To: File

CC:

From: Ryan Ellis

Date: 11/20/15

RE: Daneros Mine Reclamation Cost Estimate  
Equipment Rental Costs

I obtained the current rental rates for the major equipment planned to be used for final reclamation of the Daneros Mine from the Wheeler Machinery Co. out of Salt Lake City (801-974-0511). Wheeler Equipment no longer publishes the rental costs for the D-7 Dozer. To obtain a rental cost, I used the John Deere 950K which has a similar horsepower and operating weight for a comparable rental cost. The equipment will be rented on a monthly basis and will be returned individually as the reclamation is completed and not as a group. For example, the haul trucks will only be used for a short period of time in comparison to the D-7 dozer, which will be on site for the duration of reclamation activities. Fuel consumption was also obtained from Wheeler for each piece of equipment but is not included in the rental cost because it is included in the operating cost. The rental and operating cost is assumed to be the same for the 2 CY LHD as for the 966 Loader.

### D-7 Dozer or John Deere 950K

Monthly Rental Base Cost:	\$	14,700
Required 15% Insurance:	\$	2,205
Total Monthly Rental Cost:	\$	16,905
<i>Conversion to Hourly Rental Cost</i>		
Work Days Per Month		21
Operation hours per day		8
Hourly Rental Cost	\$	101

Hourly Fuel Cost @ 2.50 per gallon = \$20



#### 966 Loader

Monthly Rental Base Cost:	\$	11,100
Required 15% Insurance:	\$	1,665
Total Monthly Rental Cost:	\$	12,765
<i>Conversion to Hourly Rental Cost</i>		
Work Days Per Month		21
Operation hours per day		8
Hourly Rental Cost	\$	76

Hourly Fuel Cost @ 2.50 per gallon = \$12.50

#### 12 Yard Haul Truck

Monthly Rental Base Cost:	\$	6,000
<i>Conversion to Hourly Rental Cost</i>		
Work Days Per Month		21
Operation hours per day		8
Hourly Rental Cost	\$	36

Hourly Fuel Cost @ 2.50 per gallon = \$15

Equipment will require 250-hour maintenance service as the reclamation is completed. These maintenance costs are not included in the rental cost, but are added separately. The costs and quantity of maintenance will vary depending on the piece of equipment and the hours operated.



**Wheel Loader (966) Productivity Determination -400' haul**

Hours per Shift, HR:	8	
Work Efficiency, %:	0.83	Assumes 50 minutes/hour
Average Distance, FT:	400	
Operator Correction Factor	Factor	0.75
Bucket Capacity (C.Y)		5.00
Cycle Time (min)		1.58
Ideal Loader Productivity	LCY/HR	190.4
Adjusted Loader Productivity	LCY/HR	118.5

**Wheel Loader (966) Productivity Determination -1,000' haul**

Hours per Shift, HR:	8	
Work Efficiency, %:	0.83	Assumes 50 minutes/hour
Average Distance, FT:	1,000	
Operator Correction Factor	Factor	0.75
Bucket Capacity (C.Y)		5.00
Cycle Time (min)		2.94
Ideal Loader Productivity	LCY/HR	102.1
Adjusted Loader Productivity	LCY/HR	63.5

**LHD Productivity Determination -400' haul**

Hours per Shift, HR:	8	
Work Efficiency, %:	0.83	Assumes 50 minutes/hour
Average Distance, FT:	400	
Operator Ability Correction Factor	Factor	0.75
Bucket Capacity (C.Y)		1.50
Cycle Time (min)		1.58
Ideal Loader Productivity	LCY/HR	57.1
Adjusted Loader Productivity	LCY/HR	35.6



**Dozer (D-7) Productivity Determination - 100' Push Distance**

Hours per Shift, HR:	8	
Work Efficiency, %:	0.83	Assumes 50 minutes/hour
Average Dozing Distance, FT:	100	

Work Efficiency	%	83%	
Operator Ability Correction Factor	Factor	0.75	
Ideal Dozer Productivity	LCY/HR	700	CAT Handbook
Adjusted Dozer Productivity	LCY/HR	435.8	

**Dozer (D-7) Productivity Determination - 200' Push Distance**

Hours per Shift, HR:	8	
Work Efficiency, %:	0.83	Assumes 50 minutes/hour
Average Dozing Distance, FT:	200	

Work Efficiency	%	83%	
Operator Correction Factor	Factor	0.75	
Ideal Dozer Productivity	LCY/HR	400	CAT Handbook
Adjusted Dozer Productivity	LCY/HR	249.0	

**Dozer (D-7) Ripping Productivity Determination**

Hours per Shift, HR:	8	
Work Efficiency, %:	0.83	Assumes 50 minutes/hour
Ripping Depth (FT)	1	

Work Efficiency	%	83%	
Operator Correction Factor	Factor	0.75	
Ideal Ripping Productivity	LCY/HR	250.0	The Cat Handbook does not provide a chart for a D-7. Used lowest value for D-8
Adjusted Ripping Productivity	LCY/HR	155.6	

**12 CY Highway Dump Truck Productivity Determination**

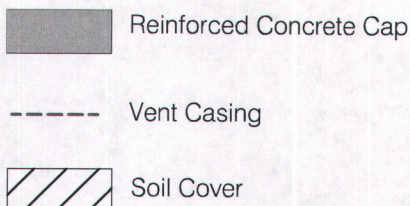
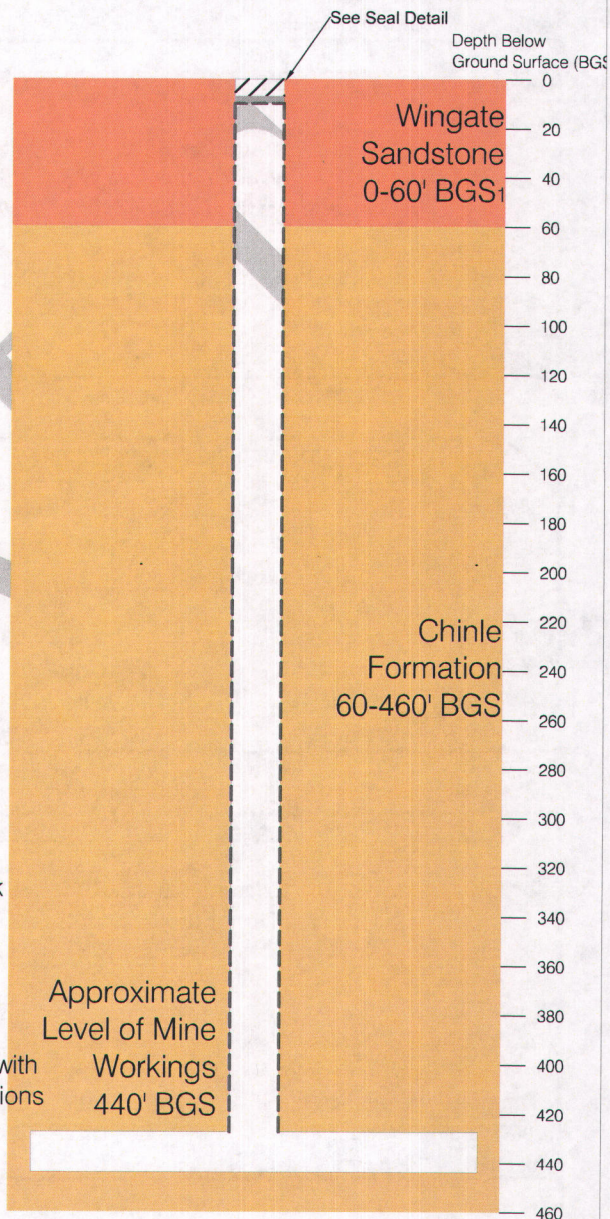
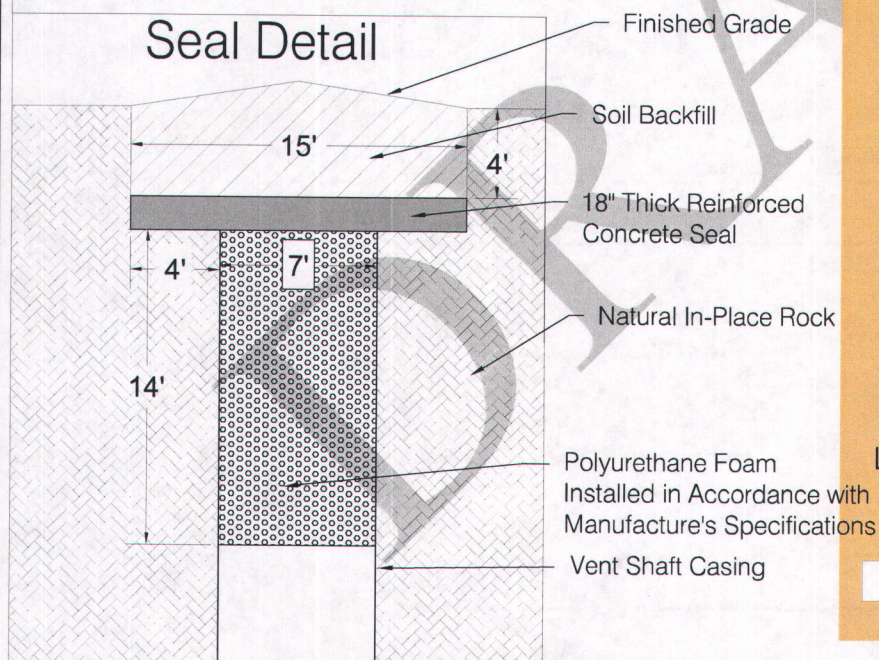
Hours per Shift, HR:	8	
Work Efficiency, %:	0.83	Assumes 50 minutes/hour
Truck Capacity (CY)	12	

Work Efficiency	%	83%	
Operator Type	Average		
Operator Correction Factor	Factor	0.75	
Average Haul Distance	Feet	26,400	
Ideal Hauling Productivity	LCY/HR	36.0	Assumes 2 trips per hour
Adjusted Hauling Productivity	LCY/HR	22.4	



# Notes:

1. The Wingate Sandstone varies between 0 feet and greater than 1000 feet thick in the area of the Daneros Mine.
2. The 2 existing vents are 7 feet in diameter and are cased. Future vents are expected to be 7 feet in diameter and cased. All Vents will be cased for the top 20-feet.
3. The concrete foundation for the vent fan shroud will be broken and placed within the vent shaft.
4. The vent casing will be removed to 5.5-feet below ground surface.
5. Approximately 3-inches of surface soil around the vent will be placed within the vent.
6. A bottom form will be placed to hold the initial polyurethane foam. Alternatively, the first lift of foam can be sprayed directly onto the steel casing and allowed to cure creating a stable bottom form for later lifts of foam.
7. Polyurethane foam will be placed and will extend to the top of the remaining steel casing and be a minimum of twice the diameter of the vent in thickness. For a 7-foot diameter shaft, the foam will be a minimum of 14-feet thick.
8. The 18-inch thick reinforced concrete cap will be placed on top of the foam and 4-feet below the ground surface. This cap will extend 4-feet beyond the diameter of the vent shaft.
9. The surface area above the concrete cap will be backfilled with soil and graded to drain away from the vent shaft.



<b>EF Energy Fuels Resources (USA) Inc.</b>			
REVISIONS		Project: <b>Daneros Mine</b>	
Date	By	County: <b>San Juan</b>	State: <b>Utah</b>
10/22/14	RE	Location:	
		<b>Figure 4-1 Vent Closure Design Cased Vent Shafts</b>	
Author: <b>RJE</b>		Date: <b>10/24/14</b>	Drafted By:





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303-974-2140  
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December 7, 2015

Mr. Paul Baker  
State of Utah Department of Natural Resources  
Division of Oil, Gas and Mining  
1594 West North Temple Suite 1210  
Box 145801  
Salt Lake City, UT 84114-5801

**RE: Submittal of Draft Reclamation Cost Estimates for Redd Block IV Mine (M/037/0046),  
Energy Queen Mine (M/037/0043) and Daneros Mine (S/037/0121)**

Dear Paul:

In response to your letters dated November 3, 2015, Energy Fuels Resources (USA) Inc. (Energy Fuels) is submitting the enclosed draft reclamation cost estimates for the following mines:

- Redd Block IV Mine (M/037/0046)
- Energy Queen Mine (M/037/0043)
- Daneros Mine (S/037/0121)

As a draft submittal, these cost estimates are being sent digitally only. If you would like us to mail you printed copies please let me know to whom and how many.

Please contact Ryan Ellis or me if you or your team have questions during your review of the draft cost estimates.

Sincerely,

A handwritten signature in blue ink that reads 'Andrea Reither'.

Andrea Reither  
Senior Environmental Specialist

cc: M. Bradley, W. Western (UDOGM), S. Bakken, T. White, R. Ellis (Energy Fuels)